

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW CRAB OF THE GENUS *CYCLOES* (CRUSTACEA;
BRACHYURA; CALAPPIDAE) FROM SAINT HELENA,
SOUTH ATLANTIC OCEAN

BY FENNER A. CHACE, JR.
Smithsonian Institution, Washington, D. C.

Since publication of the report on Saint Helena collections received between 1958 and 1964 (Chace, 1966), Arthur Loveridge has continued to send material to the Smithsonian Institution in the hope of enhancing our all too limited knowledge of the marine fauna of that remote island. A recent shipment contained the crab described below, by far the largest and perhaps the most beautiful species of *Cycloes* De Haan yet known; it rivals in size and coloration many of the more familiar box crabs of the genus *Calappa* Weber.

It is a pleasure to name this species for the collector, Rev. R. de Wet. I must reiterate my gratitude to Mr. Loveridge for his continuing important contributions and also thank my carcinological colleagues at the Smithsonian Institution, especially Henry B. Roberts, as well as Danièle Guinot of the Muséum National d'Histoire Naturelle in Paris, for helping to solve systematic and bibliographic problems associated with this description.

***Cycloes deweti* new species**

Material: Male holotype (Smithsonian Institution, Division of Crustacea cat. no. 122769) from off north coast of Saint Helena; 10-15 fm (18-27 m), in spiny lobster trap; 17 January 1968; Rev. R. de Wet.

Description: Carapace (Fig. 1) 1.12 times as broad as long in midline (not including frontal projections), broadest anterior to level of lateral teeth. Surface of carapace irregularly granulate everywhere except in furrows; frontal and epigastric regions more finely and densely granulate than remainder of surface. Mesogastric, protogastric, epigastric, hepatic, and cardiac regions delimited by longitudinal or oblique furrows, those bordering cardiac region most pronounced; gastric and cardiac regions



FIG. 1. *Cycloes deweti*, male holotype, $\times 0.56$.

not separated; branchial region irregularly ridged by five longitudinally curved furrows subparallel to anterolateral margin; surface otherwise slightly uneven, with several obscure elevations surmounted by clusters of granules. Frontal projections (Fig. 2*a*) blunt and elongate, lateral margins oblique, mesial margins subparallel, thereby forming distinctly U-shaped median sinus. Dorsal margin of orbit sharply separated by subrectangular bend from frontal margin, with distinct short fissure slightly lateral to mid-width. Anterolateral margin bearing three or four enlarged compound teeth in anterior half of length; posterior portion rather uniformly dentate, but three or four regularly spaced teeth slightly more upstanding than others. Lateral tooth prominent, sharp, and directed dorsolaterally.

Each chela (Figs. 2*c*, *d*) bearing nine dentiform lobes dorsally, proximal lobe widely bilobate, second obscurely so; extensor surface with eight or nine low but distinct elevations in dorsal half, without longitudinal ridges but with row of close-set tubercles extending horizontally from proximoventral tooth about halfway to base of fixed finger; most of extensor surface covered with scattered granules or low tubercles becoming larger and more crowded ventrally but disappearing near double row of tubercles along ventral margin. Stridulating band on inner portion of extensor margin of dactyl of right chela (Fig. 2*e*) composed of 32 transverse ridges and tubercles. Merus of cheliped bearing two large sharp teeth in line with proximoventral tooth on chela; distoventral margin of merus with fringe of long hairs. Walking legs smooth, each with fringe of long hairs on extensor margin of

merus; fringe continuing onto proximal half of carpus of two posterior legs only; left posterior leg smaller than right, apparently regenerating.

Abdomen of unique male specimen (Fig. 2*b*) slightly distorted; first two somites free, first with uninterrupted sinuous granular ridge and fringe of hairs; second somite trilobate in profile, each lobe bearing row of granules and fringe of hairs; third, fourth, and fifth somites fused; fourth somite markedly narrower proximally than distal width of third; median depression bounded by lateral elevations between third and fourth somites; fifth somite more than twice as broad proximally as long in midline; sixth somite free, probably about as long as broad proximally if not distorted; telson sinuously triangular, less than one and one-half times as long as broad.

First pleopod (Figs. 2*h*, *i*) elongate, sinuously tapered tube with irregularly triangular opening at tip; fields of minute horny denticles extending proximally from tip on mesial and lateral surfaces for less than one-fifth of length of terminal segment of appendage. Second pleopod (Figs. 2*j*, *k*) rather strongly convex toward midline in shorter proximal portion; distal slender portion variably recurved, bent completely back on left side to form buttonhook with tip directed toward base of appendage, less sharply bent on right side with tip directed toward midline of sternum; endpiece armed with seven spinules on anterior surface near tip; small bifid spine followed by two microscopic spinules on mesial margin of appendage at juncture of proximal and distal portions.

Color: After preservation in formalin for three months, carapace with dark red vermiculate pattern of partially anastomosing lines and blotches on pinkish gray or cream background, granules often white, especially anteriorly. Chelipeds similarly colored dorsally, changing to irregular isolated red bands and spots on white background on ventral half of chelae and to plain white ventral to upper longitudinal row of tubercles; flexor surface of chelae with irregular blotches of dark red on white background, largest spots on palm proximodorsal to base of movable finger and on proximal portion of movable finger. Walking legs white with broad, irregular, longitudinal stripe of dark red on anterior and posterior surfaces of carpus, propodus, and proximal portion of dactyl of all legs; dark color progressively reduced on posterior surface of merus from posterior to anterior walking legs; dark color present on anterior surfaces of meri of two anterior pairs of walking legs but not on meri of two posterior pairs. Pterygostomial region with diagonal row of three red spots below orbit, diminishing in size laterally, and interrupted row of dots and stripes on subhepatic region. Outer maxilliped (Figs. 2*f*, *g*) with roughly trapezoidal red stripe visible through pubescence on merus and additional colored areas visible when appendage is denuded, especially on palp and exopod. Sternum with red coloration in extreme anterior portion and paired spots on margins of sternites bearing third and fourth pereopods. Abdomen with paired

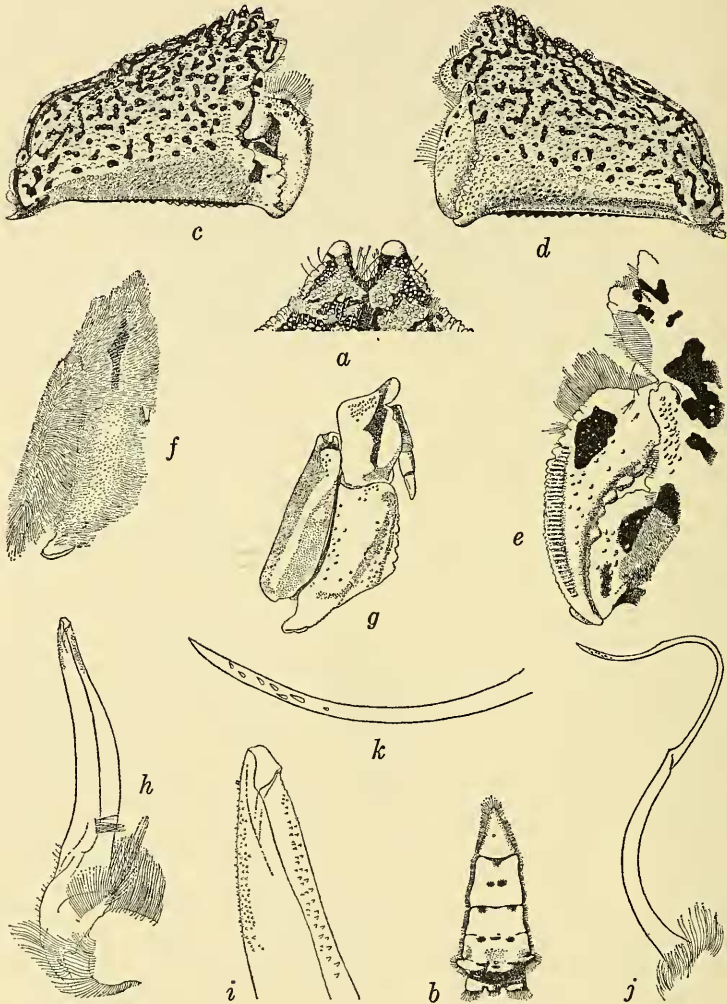


FIG. 2. *Cycloes deweti*, male holotype. *a*, front. *b*, abdomen. *c*, right chela. *d*, left chela. *e*, inner surface of dactyl of right chela. *f*, right outer maxilliped. *g*, same, denuded. *h*, right first pleopod, posterior view. *i*, tip of same. *j*, right second pleopod, anterior view. *k*, tip of same. (*b-d*, $\times 0.6$; *e-g*, $\times 1.2$; *a, h, j*, $\times 2.4$; *i, k*, $\times 10$.)

spots proximal to elevations between third and fourth somites, near distal margins of fourth and fifth somites, near center of sixth somite, and single median spots at distal end of sixth somite and near center of telson.

Measurements: Overall length of carapace 72.7 mm; length in mid-line 70.3 mm; maximum width 78.8 mm; width between lateral teeth 73.5 mm.

Range: Known only from the unique type-specimen from off Saint Helena.

Remarks: As indicated in the key that follows, *Cycloes deweti* is very similar to *C. bairdii* from American waters. It apparently differs from that species in its much larger size, vermiculate rather than spotted color pattern, sparser granulation, more strongly produced frontal lobes, and broader abdomen, especially at the sixth somite. *C. bairdii* is variable in all of these characters, as well as in the prominence of the elevations on the carapace and chelae. Eastern Pacific specimens commonly have more pronounced elevations than do those from the western Atlantic, especially on the extensor surfaces of the chelae, where they often form a carina-like row paralleling the ventral margin and turning dorsally at the distal end near the base of the movable finger. I have not seen Atlantic specimens with such a continuous ridge, but the smoother form found in the Atlantic also occurs in the Pacific, sometimes at the same locality as the more strongly sculptured variety, as noted by Rathbun (1937, p. 229). The variety *atlantica* proposed by Verrill (1908, p. 423) may prove to be a valid subspecies when adequate series of both forms become available for systematic analysis, but I doubt that it is specifically distinct.

If the Atlantic form represents a separate taxon, apparently the oldest name available for it is *Mursia balguerii* Desbonne in Schramm, 1867. Mme. Danièle Guinot rediscovered the unique type-specimen of this species in Desbonne's collection of dried crabs in the Muséum National d'Histoire Naturelle in Paris and graciously sent it to me for examination. It is an unusually smooth specimen of the species; the row of close-set tubercles extending horizontally from the proximal tooth on the extensor surface of the chela is obscure and barely distinguishable from the scattered tubercles dorsal and ventral to it.

The largest specimen of *C. bairdii* mentioned by Rathbun (1937) is a female with a carapace width of 49 mm from the Gulf of Panama. The carapace fragment from Isla Socorro, Mexico, however, represents a specimen that must have had a carapace width of about 53.5 mm. The largest *C. granulosa* that I have seen is a male from Hawaii with a carapace width of 49 mm. The only specimen of *C. cristata* examined, a male syntype from the Canary Islands, has a carapace width of 32.3 mm.

It is possible that the characters here used to distinguish *C. deweti* are directly related to size and that the Saint Helena specimen will

eventually be found to represent only an unusually large *C. bairdii*. For the present, however, it seems best to treat it as a distinct species rather than to extend the size range of *C. bairdii*, perhaps erroneously, by nearly 50 per cent and the geographic range by some 4,000 miles.

There has long been confusion about the valid name of the genus of box crabs in which the carapace is not strongly produced laterally, either as a large spine (*Mursia* Leach) or as an expansion over the walking legs (*Calappa* Weber and *Paracyclois* Miers), or in which the chelipeds are not armed with an unusually long meral spine (as in *Acanthocarpus* Stimpson). Apparently both *Cycloes* De Haan and *Cryptosoma* Brullé were proposed for this genus in the year 1837, the former for an Indo-Pacific species, the latter for a crab from the eastern Atlantic (see Monod, 1933, p. 40, and 1956, p. 114, footnote). Which name has priority may never be determined satisfactorily, but *Cryptosoma* was used ten years earlier for a genus of beetles. Although Neave (1939) suggests that the beetle name may have been an incorrect subsequent spelling of *Cryptostoma* and hence without nomenclatural status, both *Cryptostoma* and *Cryptosoma* are apparently in current use for coleopteran genera. It therefore seems best to reject the latter name for the crab as a junior homonym and to recognize *Cycloes* as the valid name of the genus.

KEY TO THE SPECIES OF *Cycloes*

1. Lateral tooth of carapace sharper but little if at all larger than marginal teeth immediately anterior to it; stridulating band on inner extensor margin of movable finger of right chela composed of less than 20 ridges and tubercles; first pleopod of male straight in distal portion, not sinuous, lateral margin of distal opening straight *C. granulosa* De Haan, 1837.
 India to Japan and Hawaii (see Sakai, 1965, p. 50, pl. 20, fig. 3 [as *Cryptosoma granulosum*]).
 Lateral tooth of carapace at least twice as large as marginal teeth immediately anterior to it; stridulating band on inner extensor margin of movable finger of right chela composed of more than 25 ridges and tubercles; first pleopod of male sinuous, lateral margin of distal opening convex 2
2. Carapace (including frontal projections) longer than broad, deeply sculptured anterior to level of lateral teeth, elevations surmounted by subconical granular bosses especially prominent on concentric ridges on branchial regions; dorsal two-fifths of extensor surface of chelae with similar conical bosses inclined dorsally
 *C. cristata* (Brullé, 1837).
 Eastern Atlantic islands from the Madeiras to the Cape Verdes (see Guinot-Dumortier & Dumortier, 1961, pp. 558-561, figs. 1-4).
 Carapace broader than long, not deeply sculptured; extensor surface of chelae without strong conical bosses 3

3. Carapace densely granulate, more of surface covered with granules than not; frontal projections not strongly produced, subtriangular, median sinus broader than long; sixth abdominal somite longer in midline than proximal width; color pattern spotted -----

----- *C. bairdii* Stimpson, 1860.

Eastern Pacific from Baja California to Ecuador, including the Galapagos Island; western Atlantic from off North Carolina and the Bermudas to Barbados and Isla de Providencia (see Rathbun, 1937, p. 225, pl. 69, figs. 3, 4, and Garth, 1946, p. 362, pl. 62, figs. 7, 8).

Carapace sparsely granulate, more of surface without granules than with, except on elevations; frontal projections strongly produced, mesial margins subparallel distally, median sinus longer than broad; sixth abdominal somite about as long in midline as wide proximally; color pattern vermiculate, especially posteriorly ---

----- *C. deweti*.

Saint Helena (see above).

LITERATURE CITED

- BRULLÉ. 1837-1839. Crustacés. In Barker-Webb, P., et S. Berthelot, Histoire naturelle des Iles Canaries, 2 (2) Entomologie: 13-18, 1 pl.
- CHACE, F. A., JR. 1966. Decapod crustaceans from St. Helena Island, South Atlantic. Proc. U. S. Nat. Mus., 118 (3536): 623-661, 15 Figs.
- GARTH, J. S. 1946. Littoral brachyuran fauna of the Galapagos Archipelago. Allan Hancock Pacific Expeditions, 5 (10): i-iv, 341-601, 1 Fig. in text, 39 pls.
- GUINOT-DUMORTIER, D., ET B. DUMORTIER. 1961. Description d'un appareil stridulatoire dans le genre Cycloës De Haan (Crustacea, Brachyura, Oxystomata, Calappidae). Bull. Mus. Nat. Hist. Nat., Paris, ser. 2, 32 (6): 558-561, 4 Figs.
- HAAN, W. DE. 1833-1850. Crustacea. In Siebold, P. F. de, Fauna Japonica. i-xvii, i-xxxi, ix-xvi, 1-243, 71 pls.
- MONOD, T. 1933. Sur quelques crustacés de l'Afrique Occidentale. Bull. Com. Et. Hist. Sci. Afr. Occ. Fr., 15 (2-3): 1-93, 26 Figs.
- . 1956. Hippidea et Brachyura ouest-africaines. Mém. Inst. Fr. Afr. Noire, 45: 1-647, 884 Figs.
- NEAVE, S. A. 1939. Nomenclator zoologicus, 1: i-xiv, 1-957.
- RATHBUN, M. J. 1937. The oxystomatous and allied crabs of America. U. S. Nat. Mus. Bull. 166: i-vi, 1-278, 47 Figs. in text, 86 pls.
- SAKAI, T. 1965. The crabs of Sagami Bay. i-xviii, 1-206, 1-92, 1-32, 26 Figs. in text, 100 pls.

- SCHRAMM, A. 1867. Crustaces de la Guadeloupe d'après un manuscrit du Docteur Isis Desbonne comparé avec les échantillons de crustacés de sa collections et les dernières publications de Mm. Henri de Saussure et William Stimpson. i-ii, 1-60, 8 pls.
- STIMPSON, W. 1860. Notes on North American Crustacea, in the Museum of the Smithsonian Institution. No. II. *Ann. Lyc. Nat. Hist. New York*, 7: 177-246, 2 pls.
- VERRILL, A. E. 1908. Decapod Crustacea of Bermuda; I. Brachyura and Anomura. *Trans. Connecticut Acad. Arts Sci.*, 13: 299-474, 67 Figs. in text, 20 pls.